

CLAIMS

1. A method of reporting information from a vehicle to a vehicle data collection system, comprising:
storing information which defines a geographic region in a vehicle, the
geographic region comprising a predetermined array of cells, each cell
5 having a cell position;
associating a plurality of cell parameters with each cell, the cell parameters
comprising a recording interval and a reporting interval;
determining a vehicle position relative to the geographic region, wherein if the
vehicle is within the geographic region, the vehicle position is
10 correlated to a vehicle cell;
recording vehicle data in accordance with the recording interval of the vehicle
cell; and
reporting the vehicle data to a vehicle data collection system in accordance
with the reporting interval.
2. The method of claim 1, further comprising repeating said steps
of determining the vehicle position, recording the vehicle data and reporting
the vehicle data for a plurality of cycles.
3. The method of claim 2, further comprising updating the information
which defines the geographic region.
4. The method of claim 2, further comprising updating at least one cell
parameter.
5. The method of claim 2, wherein the vehicle data comprises at least
one datum from the group consisting of a vehicle speed, a vehicle heading, the
vehicle position, a vehicle elevation and an ambient temperature.

6. The method of claim 2, wherein the cell position comprises a latitudinal position and a longitudinal position.

7. The method of claim 6, wherein the cell position further comprises an elevational position.

8. The method of claim 2, wherein the cell parameters further comprise a recording priority.

9. The method of claim 8, wherein the recording priority of a cell is determined as a function of a roadway located within the cell.

10. The method of claim 2, wherein the geographic region comprises a plurality of geographic regions and the method may be selectively enabled or disabled for each geographic region.

11. A method of reporting information from a vehicle to a vehicle data collection system, comprising:

storing information comprising a geographic region in a vehicle, the geographic region having a latitudinal origin (Lat_0) and a longitudinal

5 origin (Lon_0) and comprising a predetermined array of cells having a plurality of latitudinal elements (N_{LAT}) and a plurality of longitudinal elements (N_{LON}), each cell having a cell position within the array, a latitudinal width (C_{LAT}) and a longitudinal width (C_{LON});

associating a plurality of cell parameters with each cell, the cell parameters

10 comprising a recording priority ($T_{(X,Y)}$), reporting interval (t_r) and measurement interval (t_m);

determining a vehicle position comprising a vehicle latitude (Lat_Y) and vehicle longitude (Lon_X);

converting the vehicle position to a vehicle cell (X, Y) in relation to the array

15 of cells;

determining whether the vehicle cell is within the array of cells comprising the geographic region;
 if the vehicle is within the region , recording vehicle data in accordance with the recording priority and the recording interval of the vehicle cell; and
 20 reporting the vehicle data to a vehicle data collection system in accordance with the reporting interval.

12. The method of claim 11, further comprising repeating determining the vehicle position, converting the vehicle position to a vehicle cell, determining whether the vehicle cell is within the array of cells, recording the vehicle data and reporting the vehicle data for a plurality of cycles.

13. The method of claim 12, wherein converting the vehicle position to a vehicle cell (X, Y) in relation to the array of cells is performed according to the following relationship:

$$X = (Lon_X - Lon_0)/C_{LON} ; \text{ and}$$

$$5 \quad Y = (Lat_y - Lat_0)/C_{LAT}.$$

14. The method of claim 13, wherein determining whether the vehicle cell is within the array of cells comprising the geographic region is performed by evaluating the values of X and Y, and wherein if $0 \leq X \leq N_{LON}$ and $0 \leq Y \leq N_{LAT}$, the vehicle is within the geographic region.

15. The method of claim 12, further comprising updating the information which defines the geographic region.

16. The method of claim 12, further comprising updating at least one cell parameter.

17. The method of claim 12, wherein the vehicle data comprises at least one datum from the group consisting of a vehicle speed, a vehicle heading, the vehicle position, a vehicle elevation and an ambient temperature.

18. The method of claim 12, wherein the cell position further comprises an elevational position.

19. The method of claim 12, wherein the recording priority of a cell is determined as a function of a roadway associated with the cell.

20. The method of claim 19, wherein the geographic region comprises a plurality of roadways located therein, each roadway having a roadway identifier associated therewith, and wherein the recording priority of a cell is determined as a function of the roadway identifier.

21. The method of claim 12, wherein the geographic region comprises a plurality of geographic reporting regions and the method may be selectively enabled or disabled for each of the geographic regions.

22. A system for communicating vehicle data between a vehicle and a vehicle data collection system:

a vehicle that is adapted to record and report vehicle data as a function of a vehicle position, said vehicle having a vehicle data storage system to
5 record vehicle data and a vehicle communication system to report the vehicle data that is adapted for wireless communication of the vehicle data;

a vehicle data collection system that is adapted to receive and store vehicle data, said system adapted to receive wireless communication of the
10 vehicle data from the vehicle.

23. The system of claim 22, wherein the vehicle is adapted to record and report vehicle data as a function of the vehicle position according to a method comprising:

storing information which defines a geographic region in the vehicle, the

5 geographic region comprising a predetermined array of cells, each cell having a cell position;

associating a plurality of cell parameters with each cell, the cell parameters comprising a recording interval and a reporting interval;

determining the vehicle position relative to the geographic region; wherein if

10 the vehicle is within the geographic region, the vehicle position is correlated to a vehicle cell;

recording the vehicle data in accordance with the recording interval of the vehicle cell;

reporting the vehicle data to the vehicle data collection system in accordance

15 with the reporting interval; and

repeating the steps of determining the vehicle position, recording the vehicle data and reporting the vehicle data for a plurality of cycles.

24. The system of claim 23, further comprising updating the information which defines the geographic region.

25. The system of claim 24, wherein updating the information which defines the geographic region comprises communicating updated information concerning the geographic region from the vehicle data collection system to the vehicle and storing the updated information in the vehicle data

5 storage system.

26. The system of claim 23, further comprising updating at least one cell parameter.

27. The system of claim 26, wherein updating at least one cell parameter comprises communicating the updated information concerning the at least one cell parameter from the vehicle data collection system to the vehicle and storing the updated information in the vehicle data storage system.

28. The system of claim 22, wherein the vehicle data comprises at least one datum from the group consisting of a vehicle speed, a vehicle heading, the vehicle position, a vehicle elevation and an ambient temperature.